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R E M II

PERFORMANCE OF REMEDIAL RESPONSE ACTIVITIES AT UNCONTROLLED HAZARDOUS WASTE SITES

U.S. EPA CONTRACT NO. 68-01-6939

CAMP DRESSER & McKEE INC.
ROY F. WESTON, INC.
WOODWARD-CLYDE CONSULTANTS
CLEMENT ASSOCIATES, INC.
ICF INCORPORATED
C. C. JOHNSON & ASSOCIATES, INC.

SUPPLEMENTAL QUALITY ASSURANCE PROJECT PLAN FOR ADDITIONAL GROUNDWATER SAMPLING SKINNER LANDFILL WEST CHESTER, OHIO

June 1986

Prepared for:
U.S. Environmental Protection Agency
Emergency and Remedial Response Branch
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Document No.: 130-RI1-OP-CWPN-1

Work Assignment No.: 31-5L73.0

CDM

environmental engineers, scientists, planners, & management consultants

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July 1, 1986

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Subject: Quality Assurance Project Plan for the Skinner Landfill Site
Work Assignment No.: 31-5L73.0
EPA Contract No.: 68-01-6939
Document No.: 130-RI1-OP-CWPN-1

Gentlemen:

Camp Dresser & McKee is pleased to submit this Supplemental Quality Assurance Project Plan (QAPP) for the Remedial Investigation/ Feasibility Study (RI/FS) at the Skinner Landfill site in the town of West Chester, Ohio for approval. This document has been developed as a supplement to the Skinner QAPP, Document No. 130-WP1-OP-CVYR-1 (June 1986).

If you have any questions, do not hesitate to contact me directly or the REM II Site Manager, R. Michael Bort, P.E.

Very truly yours,

CAMP DRESSER & MCKEE INC.

John W. Hawthorne, P.E.
Senior Vice President
Region V Manager

cc: U. Joiner, Contracting Officer, U.S. EPA
S. Hooper, Project Officer, U.S. EPA
N. Willis, Regional Coordinator, U.S. EPA

PERFORMANCE OF REMEDIAL RESPONSE
ACTIVITIES AT UNCONTROLLED HAZARDOUS
WASTE SITES (REM II)

U.S. EPA CONTRACT NO.: 68-01-6939

SUPPLEMENTAL
QUALITY ASSURANCE PROJECT PLAN (QAPP)
FOR
ADDITIONAL GROUNDWATER SAMPLING
FOR
SKINNER LANDFILL
WEST CHESTER, OHIO

DOCUMENT NO.: 130-RI1-OP-CWPN

WORK ASSIGNMENT NO.: 31-5L73.0

Approved: _____
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REM II Site Manager, RFW

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for John W. Hawthorne
REM II Region V Manager, CDM

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James H. Adams, Jr.
U.S. EPA Region V
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SUPPLEMENTAL QUALITY ASSURANCE PROJECT PLAN
FOR ADDITIONAL GROUNDWATER SAMPLING
SKINNER LANDFILL
WEST CHESTER, OHIO

INTRODUCTION

This Supplemental Quality Assurance Project Plan revises the analytical parameters for the residential well and second round of groundwater sampling activities for the Skinner Landfill site in West Chester, Ohio. This document has been developed as a supplement to the Skinner QAPP, Document No. 130-WP1-OP-CVYR-1 (June 1986) and is intended to be used as a companion document to the original QAPP.

BACKGROUND

The Skinner QAPP (April 1986) calls for sampling and analysis of on-site groundwater monitoring wells and surrounding off-site residential wells for a variety of parameters. The list of analytical parameters for residential wells included four non-HSL pesticide compounds (hexachloronorboradiene, octachlorocyclopentene, heptachloronorborene, chlordene), four minerals (alkalinity, chloride, fluoride, sulfate), and five nutrients (ammonia, TKN, TOC, nitrate-nitrite, total phosphorous).

Review of the Skinner QAPP by the U.S. EPA Quality Assurance Office raised questions regarding the need to analyze for the above parameters in residential wells when they were not requested for analysis in groundwater monitoring wells. Subsequent to receipt of these U.S. EPA comments, the sampling program for the residential wells and second and subsequent rounds of groundwater sampling, hereafter referred to as the second round, has been reviewed and revised as indicated below.

PURPOSE

Review of the analytical parameters selected for analysis in the on-site groundwater and residential well samples has resulted in changes to the sampling and analysis program which are outlined in this Supplemental QAPP.

Specifically, the Supplemental QAPP revises the original QAPP in the following manner:

- The four non-HSL pesticide compounds included in the residential well analytical protocol will be added to the analytical protocol for the second round of groundwater samples from on-site wells.
- The number of minerals in the residential well analytical protocol is reduced to three (alkalinity, chloride, and sulfate), and these three parameters will be added to the analytical protocol for the second round of groundwater samples from on-site wells.
- The number of nutrients in the residential well analytical protocol is reduced to two (ammonia and nitrate-nitrite), and there two parameters will be added to the analytical protocol for the second round of groundwater samples from on-site wells.

By altering the existing QAPP in this manner, the results of the second round of groundwater samples will be directly comparable to residential well samples for all requested parameters. This plan delineates procedures used for field sampling and laboratory analysis required to meet this goal.

GROUNDWATER SAMPLING ACTIVITIES

Locations

The locations of the monitoring wells from which groundwater samples will be collected are shown in Figure 1. A complete list of residential wells to be sampled is provided in Table 1. All samples will be collected from existing wells.

Sample Types

All samples to be collected as part of this QAPP will be from residential and groundwater monitoring wells.

Procedures

Water sampling procedures to be used for the collection of the second round of groundwater sampling and residential well sampling are described in Sections 4.5 and 4.6 in the Sampling and Analysis Plan of the Skinner Landfill QAPP. All sampling and support activities will conform to the requirements and protocol described in that document.

PROJECT ORGANIZATION AND RESPONSIBILITY

Camp Dresser & McKee (CDM), as prime contractor, has overall responsibility for all phases of the RI at the Skinner Landfill site. Roy F. Weston, Inc. (Weston) is a REM II subcontractor to CDM. Weston will perform the field investigations and prepare the RI report. Weston will also perform the development, screening and evaluation of remedial action alternatives; develop the conceptual design of the selected action; and prepare the related reports. CDM will provide administrative oversight and QA/QC for all deliverables. Clement Associates, Inc. and ICF, Inc., which are also REM II subcontractors to CDM, will provide specialty services in the areas of risk assessment and community relations, respectively. All four firms will provide project management as appropriate to their responsibilities. All deliverables will be issued by CDM.

Operational Responsibility

Operational responsibilities are those involving execution and direct management of the technical and administrative aspects of this project. The following responsibilities have been assigned for the RI at Skinner Landfill:

- o Remedial Project Manager (RPM)
  Gene Wong, U.S. EPA, Region V, ERRB

- o REM II Region V Manager
  John W. Hawthorne, REM II, CDM

- o Site Manager
  R. Michael Bort, P.E., REM II, Weston

- o Field Manager
  Mark Hutson, REM II, Weston

- o Principal Investigator RI
  Mark Hutson, REM II, Weston

Laboratory Responsiblity

Laboratory responsibilities are those involving the performance of analytical services, the preparation of Special Analytical Services (SAS) requests and/or field laboratory procedures, and the assessment of analytical data including review of tentatively identified compounds. The following responsibilities have been assigned for the RI at Skinner Landfill:

- o RAS and SAS from Contract Laboratory Program
  Charles T. Elly, U.S. EPA, Region V, CPSM-CRL

- o Analysis of Private Well Samples
  Central Regional Laboratory
  Curtis Ross, U.S. EPA, Region V, CRL-Director

- o Preparation of SAS Requests
  Earl Hanson, REM II, Weston

- o Data Assessment for RAS and SAS from CLP
  Contract ~~Program~~ Project Management Section, CRL

- o Data Assessment of Analytical Services from CRL
  QC Coordinator, CRL

- o Review of Tentatively Identified Compounds
  Earl Hanson, REM II, Weston
  Mark Hutson, REM II, Weston

QA Responsibility

Quality Assurance (QA) responsibilities are those involved with monitoring and reviewing the procedures used to perform all aspects of

this project including data collection, analytical services, and report preparation. Primary responsibility for project quality rests with the Site Manager. Ultimate responsibility for project quality rests with CDM. Specific QA responsibilities for the RI at Skinner Landfill have been assigned as follows:

- Overall QA for REM II Activities
  John W. Hawthorne, REM II, CDM

- Overall QA for CLP/CRL Activities
  Quality Assurance Office, U.S. EPA, Region V

- QA for RAS from CLP
  Support Services Branch, OERR, EPA HQ
  EMSL Las Vegas
  Contract Program Management Section, CRL

- QA for SAS from CLP
  Quality Assurance Office, U.S. EPA, Region V

- QA for Analytical Services from CRL
  Quality Assurance Office, U.S. EPA, Region V
  QC Coordinator, CRL

- Performance and Systems Audits of RAS from CLP
  U.S. EPA, EMSL-Las Vegas

- Performance and Systems Audits of CRL
  Quality Assurance Office, U.S. EPA, Region V
  QC Coordinator, CRL

- Systems Audit of Field Activities
  Edward A. Need, REM II, Weston

- Weston QA Review
  Glen Johnson, REM II, Weston

- CDM QA Review
  David Horsefield, P.E., REM II, CDM
  National Program Management Office, REM II, CDM

- QA/QC Summaries for Revised RI and FS/CD Reports
  Kurt Stimpson, REM II, Weston

HEALTH AND SAFETY

Site workers for these tasks will adhere to the Skinner Landfill Health and Safety Plan REM II Document No. 130-WP1-OP-BBJS-3. The plan specifies Level C personnel protection with Level D contingency for groundwater sampling and Level D personnel protection for residential well sampling.

SAMPLE ANALYSIS

Investigative samples collected from each well will be analyzed for the parameters outlined in Tables 2 and 3. Blank and duplicate samples will be collected at a frequency of one per ten investigative samples and analyzed for the investigative parameters. At selected wells, sufficient volume (three times the investigative sample volume) will be collected and submitted for matrix spike duplicate analysis of the organic parameters.

Samples collected from residential wells will be sent to the Central Regional Laboratory (CRL) for analysis. Samples collected from groundwater monitoring wells will be sent to the Contract Laboratory Program (CLP). Analysis parameters for residential well samples analyzed by the CRL and groundwater samples analyzed by the CLP are shown in Appendix 1. SAS forms for non-RAS parameters to be analyzed by CLP are included in Appendix 2.

SCHEDULE

Field activities to be performed under this QAPP are anticipated to commence during the last week of July 1986 and continue for approximately two weeks. A 30-day turn-around time has been assumed for receipt of analytical data from the CLP laboratory, a Technical Memorandum (TM) summarizing this sampling activity will be submitted within 8 weeks after receipt of these results. A summary of this activity will be included in the RI report.

APPENDIX 1

ANALYTICAL PARAMETERS FOR RESIDENTIAL WELL SAMPLES ANALYZED BY CRL

AND

MONITORING WELL SAMPLES ANALYZED BY CLP

METHOD DETECTION LIMITS FOR ORGANICS FROM CRL

VOLATILE COMPOUNDS

PARAMETER	CAS #	METHOD* DETECTION LIMIT (ug/l)	SPIKE LEVEL IN REAGENT WATER (ug/l)	CONTROL* LIMITS (ug/l)
BENZENE	71-43-2	1.5	10	8-12
BROMODICHLOROMETHANE	75-27-4	1.5	10	8-12
BROMOFORM	75-25-2	1.5	10	8-12
BROMOMETHANE	74-83-9	10.0	10	1-20
CARBON TETRACHLORIDE	56-23-5	1.5	10	8-12
CHLOROBENZENE	108-90-7	1.5	10	8-12
CHLOROETHANE	75-00-3	1.5	10	8-12
2-CHLOROETHYL VINYL ETHER	110-75-8	1.5	10	8-12
CHLOROFORM	67-66-3	1.5	10	8-12
CHLOROMETHANE	74-87-3	10.0	10	1-20
DIBROMOCHLOROMETHANE	124-48-1	1.5	10	8-12
1,1-DICHLOROETHANE	75-34-3	1.5	10	8-12
1,2-DICHLOROETHANE	107-06-2	1.5	10	8-12
1,1-DICHLOROETHENE	75-34-4	1.5	10	8-12
trans-1,2-DICHLOROETHENE	156-60-5	1.5	10	8-12
1,2-DICHLOROPROPANE	78-87-5	1.5	10	8-12
cis-1,3-DICHLOPROPROPENE	10061-01-5	2.0	10	8-12
trans-1,3-DICHLOROPROPENE	10061-02-6	1.0	10	8-12
ETHYL BENZENE	100-41-4	1.5	10	8-12
METHYLENE CHLORIDE (1)	75-09-2	1.0	10	8-12
1,1,2,2-TETRACHLOROETHANE	79-34-5	1.5	10	8-12
TETRACHLOROETHENE	127-18-4	1.5	10	8-12
TOLUENE (1)	108-88-3	1.5	10	8-12
1,1,1-TRICHLOROETHANE	71-55-6	1.5	10	8-12
1,1,2-TRICHLOROETHANE	79-00-5	1.5	10	8-12
TRICHLOROETHENE	79-01-6	1.5	10	8-12
VINYL CHLORIDE	75-01-4	10.0	10	1-20
ACROLEIN	107-02-8	100.0	300	200-400
ACETONE (1)	67-64-1	75.0	300	225-375
ACRYLONITRILE	107-13-1	50.0	300	250-350
CARBON DISULFIDE	75-15-0	3.0	10	7-13
2-BUTANONE	78-93-3	(50)	100	50-150
VINYL ACETATE	108-05-4	15.0	15	1-30
4-METHYL-2-PENTANONE	108-10-1	(3)	20	16-24
2-HEXANONE	519-78-6	(50)	150	100-200
STYRENE	100-42-5	1.0	10	8-12
m-XYLENE	108-38-3	2.0	10	8-12
o-XYLENE (2)	95-47-6			
p-XYLENE (2)	106-42-3	2.5	20	7-13

* IN REAGENT WATER

1) COMMON LABORATORY SOLVENT - BLANK LIMIT IS 5x METHOD DETECTION LIMIT

2) THE o-XYLENE AND p-XYLENE ARE REPORTED AS A TOTAL OF THE TWO

99902/03

Method Detection Limits for
RAS Organics from CLP

Volatiles	CAS Number	Detection Limits* Low Water[a] ug/L	Low Soil/Sediment[b] ug/Kg
1. Chloromethane	74-87-3	10	10
2. Bromomethane	74-83-9	10	10
3. Vinyl Chloride	75-01-4	10	10
4. Chloroethane	75-00-3	10	10
5. Methylene Chloride	75-09-2	5	5
6. Acetone	67-64-1	10	10
7. Carbon Disulfide	75-15-0	5	5
8. 1,1-Dichloroethene	75-35-4	5	5
9. 1,1-Dichloroethane	75-35-3	5	5
10. trans-1,2-Dichloroethene	156-60-5	5	5
11. Chloroform	67-66-3	5	5
12. 1,2-Dichloroethane	107-06-2	5	5
13. 2-Butanone	78-93-3	10	10
14. 1,1,1-Trichloroethane	71-55-6	5	5
15. Carbon Tetrachloride	56-23-5	5	5
16. Vinyl Acetate	108-05-4	10	10
17. Bromodichloromethane	75-27-4	5	5
18. 1,1,2,2-Tetrachloroethane	79-34-5	5	5
19. 1,2-Dichloropropane	78-87-5	5	5
20. trans-1,3-Dichloropropene	10061-02-6	5	5
21. Trichloroethene	79-01-6	5	5
22. Dibromochloromethane	124-48-1	5	5
23. 1,1,2-Trichloroethane	79-00-5	5	5
24. Benzene	71-43-2	5	5
25. cis-1,3-Dichloropropene	10061-01-5	5	5

Volatiles	CAS Number	Detection Limits[a] Low Water[a] ug/L	Low Soil/Sediment[b] ug/Kg
26. 2-Chloroethyl Vinyl Ether	110-75-8	10	10
27. Bromoform	75-25-2	5	5
28. 2-Hexanone	591-78-6	10	10
29. 4-Methyl-2-pentanone	108-10-1	10	10
30. Tetrachloroethene	127-18-4	5	5
31. Toluene	108-88-3	5	5
32. Chlorobenzene	108-90-7	5	5
33. Ethyl Benzene	100-41-4	5	5
34. Styrene	100-42-5	5	5
35. Total Xylenes		5	5

[a]Medium Water Contract Required Detection Limits (CRDL) for Volatile HSL Compounds are 100 times the individual Low Water CRDL.

[b]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Volatile HSL Compounds are 100 times the individual Low Soil/Sediment CRDL.

Semi-Volatiles	CAS Number	Detection Limits[a] Low Water[c] ug/L	Low Soil/Sediment[d] ug/Kg
36. Phenol	108-95-2	10	330
37. bis(2-Chloroethyl) ether	111-44-4	10	330
38. 2-Chlorophenol	95-57-8	10	330
39. 1,3-Dichlorobenzene	541-73-1	10	330
40. 1,4-Dichlorobenzene	106-46-7	10	330
41. Benzyl Alcohol	100-51-6	10	330
42. 1,2-Dichlorobenzene	95-50-1	10	330
43. 2-Methylphenol	95-48-7	10	330
44. bis(2-Chloroisopropyl) ether	39638-32-9	10	330
45. 4-Methylphenol	106-44-5	10	330
46. N-Nitroso-Dipropylamine	621-64-7	10	330
47. Hexachloroethane	67-72-1	10	330
48. Nitrobenzene	98-95-3	10	330
49. Isophorone	78-59-1	10	330
50. 2-Nitrophenol	88-75-5	10	330
51. 2,4-Dimethylphenol	105-67-9	10	330
52. Benzoic Acid	65-85-0	50	1600
53. bis(2-Chloroethoxy) methane	111-91-1	10	330
54 2,4-Dichlorophenol	120-83-2	10	330
55. 1,2,4-Trichlorobenzene	120-82-1	10	330
56. Naphthalene	91-20-3	10	330
57. 4-Chloroaniline	106-47-8	10	330
58. Hexachlorobutadiene	87-68-3	10	330
59. 4-Chloro-3-methylphenol (para-chloro-meta-cresol)	59-50-7	10	330
60. 2-Methylnaphthalene	91-57-6	10	330
61. Hexachlorocyclopentadiene	77-47-4	10	330
62. 2,4,6-Trichlorophenol	88-06-2	10	330
63. 2,4,5-Trichlorophenol	95-95-4	50	1600

Semi-Volatiles	CAS Number	Detection Limits[a] Low Water[c] ug/L	Low Soil/Sediment[c] ug/Kg
64. 2-Chloronaphthalene	91-58-7	10	330
65. 2-Nitroaniline	88-74-4	50	1600
66. Dimethyl Phthalate	131-11-3	10	330
67. Acenaphthylene	208-96-8	10	330
68. 3-Nitroaniline	99-09-2	50	1600
69. Acenaphthene	83-32-9	10	330
70. 2,4-Dinitrophenol	51-28-5	50	1600
71. 4-Nitrophenol	100-02-7	50	1600
72. Dibenzofuran	132-64-9	10	330
73. 2,4-Dinitrotoluene	121-14-2	10	330
74. 2,6-Dinitrotoluene	606-20-2	10	330
75. Diethylphthalate	84-66-2	10	330
76. 4-Chlorophenyl Phenyl ether	7005-72-3	10	330
77. Fluorene	86-73-7	10	330
78. 4-Nitroaniline	100-01-6	50	1600
79. 4,6-Dinitro-2-methylphenol	534-52-1	50	1600
80. N-nitrosodiphenylamine	86-30-6	10	330
81. 4-Bromophenyl Phenyl ether	101-55-3	10	330
82. Hexachlorobenzene	118-74-1	10	330
83. Pentachlorophenol	87-86-5	50	1600
84. Phenanthrene	85-01-8	10	330
85. Anthracene	120-12-7	10	330
86. Di-n-butylphthalate	84-74-2	10	330
87. Fluoranthene	206-44-0	10	330
88. Pyrene	129-00-0	10	330
89. Butyl Benzyl Phthalate	85-68-7	10	330
90. 3,3'-Dichlorobenzidine	91-94-1	20	660
91. Benzo(a)anthracene	56-55-3	10	330
92. bis(2-ethylhexyl)phthalate	117-81-7	10	330
93. Chrysene	218-01-9	10	330
94. Di-n-octyl Phthalate	117-84-0	10	330
95. Benzo(b)fluoranthene	205-99-2	10	330
96. Benzo(k)fluoranthene	207-08-9	10	330
97. Benzo(a)pyrene	50-32-8	10	330

Semi-Volatiles	CAS Number	Detection Limits[a] Low Water[c] ug/L	Low Soil/Sediment[d] ug/Kg
98. Indeno(1,2,3-cd)pyrene	193-39-5	10	330
99. Dibenz(a,h)anthracene	53-70-3	10	330
100. Benzo(g,h,i)perylene	191-24-2	10	330

[c]Medium Water Contract Required Detection Limits (CRDL) for Semi-Volatile HSL Compounds are 100 times the individual Low Water CRDL.

[d]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Semi-Volatile HSL Compounds are 60 times the individual Low Soil/Sediment CRDL.

Pesticides	CAS Number	Detection Limits* Low Water[e] ug/L	Low Soil/Sediment[f] ug/Kg
101. alpha-BHC	319-84-6	0.05	8.0
102. beta-BHC	319-85-7	0.05	8.0
103. delta-BHC	319-86-8	0.05	8.0
104. gamma-BHC (Lindane)	58-89-9	0.05	8.0
105. Heptachlor	76-44-8	0.05	8.0
106. Aldrin	309-00-2	0.05	8.0
107. Heptachlor Epoxide	1024-57-3	0.05	8.0
108. Endosulfan I	959-98-8	0.05	8.0
109. Dieldrin	60-57-1	0.10	16.0
110. 4,4'-DDE	72-55-9	0.10	16.0
111. Endrin	72-20-8	0.10	16.0
112. Endosulfan II	33213-65-9	0.10	16.0
113. 4,4'-DDD	72-54-8	0.10	16.0
114. Endosulfan Sulfate	1031-07-8	0.10	16.0
115. 4,4'-DDT	50-29-3	0.10	16.0
116. Endrin Ketone	53494-70-5	0.10	16.0
117. Methoxychlor	72-43-5	0.5	80.0
118. Chlordane	57-74-9	0.5	80.0
119. Toxaphene	8001-35-2	1.0	160.0
120. AROCLOR-1016	12674-11-2	0.5	80.0
121. AROCLOR-1221	11104-28-2	0.5	80.0
122. AROCLOR-1232	11141-16-5	0.5	80.0
123. AROCLOR-1242	53469-21-9	0.5	80.0
124. AROCLOR-1248	12672-29-6	0.5	80.0
125. AROCLOR-1254	11097-69-1	1.0	160.0
126. AROCLOR-1260	11096-82-5	1.0	160.0

[e]Medium Water Contract Required Detection Limits (CRDL) for Pesticide HSL Compounds are 100 times the individual Low Water CRDL.

[f]Medium Soil/Sediment Contract Required Detection Limits (CRDL) for Pesticide HSL compounds are 15 times the individual Low Soil/Sediment CRDL.

*Detection limits listed for soil/sediment are based on wet weight. The detection limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the contract, will be higher.

** Specific detection limits are highly matrix dependent. The detection limits listed herein are provided for guidance and may not always be achievable.

TABLE I

Task: Analysis of soil extracts for seven organochloride hydrocarbons, 3 of which are currently HSL compounds and 4 of which are not. To be analyzed using GC/EC and GC/MS.

Compound	Requested Limit for GC/EC (ug/l)	Requested Limit for GC/MS (ug/l)
Hexachlorobenzene *	0.05	1.5
Hexachlorocyclopentadiene *	0.10	2.0
Hexachlorobutadiene *	0.05	1.0
Hexachloronorboradiene	0.05	1.0
Octachlorocyclopentene	0.05	1.0
Heptachloronorborene	0.05	1.0
Chlordene	0.05	1.0

* HSL Compounds

TABLE II

QC LEVEL OF EFFORT FOR CLP ANALYTICAL SERVICES

Method of Analysis	Lab Blanks	Spikes or Surrogates/Spikes	Lab Duplicates	Matrix Spike Duplicate
GC/MS	One per set of samples or a minimum of 1 in 10	Surrogates added to each sample and matrix spikes added to one sample per set	NR	One per set of samples or a minimum of 1 in 1(
GC/EC	One per set of samples or a minimum of 1 in 10	One spike per set of samples or a minimum of 1 in 10	One per set of samples or a minimum of 10	One per set of samples or a minimum of 1 in 1(

U.S. Environmental Protection Agency
HWI Sample Management Office
P.O. Box 818, Alexandria, Virginia 22313
PHONE: (703) 557-2490 or FTS-557-2490

SAS Number

SAS/9

SPECIAL ANALYTICAL SERVICES
Regional Request

ALKALINITY ANALYSIS IN WATER

[X] Regional Transmittal [ ] Telephone Request

a. EPA Region and Site Name: Skinner Landfill, Region V

b. Regional Representative: Dennis Wesoloski

c. Telephone Number: (312) 886-1971

d. Date of Request:

Please provide below a description of your request for Special Analytical Services under the Uncontrolled Hazardous Waste Dumpsite Program. In order to most efficiently obtain laboratory capability for your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

1. General description of analytical service requested:

1. Analysis for alkalinity

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

22 groundwater samples, low concentration,

2 of which are duplicates and 2 are blanks

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

Superfund RI/FS activity at fund - lead site

4. Estimated date(s) of collection: Weeks of August 1 and August 8, 1986

5. Estimated date(s) and method of shipment: Weeks of August 1 and August 8, 1986 Air Express

6. Approximate number of days results required after lab receipt of samples: 30 days or

7. Analytical protocol required (attach copy if other than a protocol currently used in this program):

(1) EPA Method 310.1 or (2) "Standard Methods." 16th Edition, Method 403 Report lab pH values with sample results.

Check for oil or grease coating on electrode.

8. Special technical instructions (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.):

(1) Use potentiometric titrator (manual or automated) to pH 4.5 for alkalinity concentrations ≥ 20 mg/l $CaCO_3$. (2) For alkalinity values < 20 mg/l use section 6.3 of EPA Method 310.1. (3) Refrigerate samples until analysis and validation of results. (4) Test samples within 1 week of collection. (5) Do not use titrant volumes > 50 ml. Analysis must be completed within 7 days of sampling date. (6) Report starting pH.

9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to program discretion.

Test procedure used will clearly be identified. Bench records tabulating order of titrant standardization, lab blanks, samples, lab control standards, etc., with resulting titrant volumes (or titrant read-outs), will be provided along with copies of worksheets used to calculate alkalinity results. All records of analysis and calculations must be legible and labeled. List pH value of solution before titration, volume of acid at pH 4.5, and normal

10. Other (use additional sheets or attach supplementary information, as needed): of acid

11. Name of sampling/shipping contact: Wendy Dewar

Phone: (312) 786-0253

Please return this request to the Sample Management Office as soon as possible to expedite

I. Data Requirements

Parameter:	Detection Limit	Precision Desired (± % or Conc.)
Alkalinity	20 mg/l $CaCO_3$ for Hi-Level	±10% for concentration > 20 mg/l $CaCO_3$

I. QC Requirements

Audits Required	Frequency of Audits	Limits* (% or Conc.)
(1) Sample Spike-concentrations will be > 30% of sample concentration but spiked sample shall not exceed 50 ml titrant	1 per sample set of 10	85-115% Recovery of spike added
(2) Titrant Standardization	Standardize titrant each week of analysis	Weekly
(3) Lab Control Standard (EPA QC Mineral Ref. sample 1 set of 2 samples)	Samples tested at beginning of each run and at evenly distributed intervals during analysis	85-115% Recovery
(4) Duplicates	1 per sample set of 10	±10% (High Level)
(5) Blanks	One for every 10 samples	± 5 mg/l $CaCO_3$ (High Level)

I. *Action Required if Limits are Exceeded:

Notify: Dennis Wesoloski - U.S. EPA (312) 886-1971

HWI Sample Management Office
P. O. Box 818, Alexandria, Virginia 22313
PHONE: (703) 557-2490 or FTS-557-2490

SAS Number

SPECIAL ANALYTICAL SERVICES
Regional Request

CHLORIDE ANALYSIS IN WATER

[X] Regional Transmittal [ ] Telephone Request

A. EPA Region and Site Name: Skinner, Region V

B. Regional Representative: Dennis Wesoloski

C. Telephone Number: (312) 886-1971

D. Date of Request:

Please provide below a description of your request for Special Analytical Services under the Uncontrolled Hazardous Waste Dumpsite Program. In order to most efficiently obtain laboratory capability for your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

E. General description of analytical service requested:

1. Analysis for chloride in water

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

22 groundwater samples, low concentration, 2 of which are duplicates and 2 are blanks

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

Superfund RI/FS activity at fund - lead site.

4. Estimated date(s) of collection: Weeks of August 1 and August 8, 1986

5. Estimated date(s) and method of shipment: Weeks of August 1 and August 8, 1986 — Air Express

6. **Approximate number of days results required after lab receipt of samples:** 30 days

7. **Analytical protocol required (attach copy if other than a protocol currently used in this program):**

   1. EPA Method 325.1 (Colorimetric, Automated Ferricyanide, AAI), or

   2. EPA Method 325.2 (Colorimetric, Automated Ferricyanide, AAII), or

   3. EPA Method 325.3 (Titrimetric, Mercuric Nitrate), or

   4. "Standard Methods", 15th edition, Methods 407 b or c (Mercuric Nitrate, or Potentiometric Titrimetric Methods).

8. **Special technical instructions (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.):**

   Automated potentiometric titrators can be used for "Standard Methods" Method 407C

9. **Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to program discretion.**

   Test procedure used will be clearly identified. Bench records tabulating order of calibrati standards (or titrant standardization), blanks, samples, lab control standards, etc., with resulting absorbance (or titrant volume) or concentration read-outs, will be provided along with copies of worksheets used to calculate cholride results. All records of analysis and calculation must be legible.

10. **Other (use additional sheets or attach supplementary information, as needed):**

11. **Name of sampling/shipping contact:** Wendy Dewar

    Phone: (312) 786-0253

Please return this request to the Sample Management Office as soon as possible to expedite processing of your request for special analytical services. Should you have any questions

U.S. Environmental Protection Agency
CLP Sample Management Office
P. O. Box 818, Alexandria, Virginia 22313
PHONE: (703)/557-2490 or FTS/557-2490

SAS Number

SPECIAL ANALYTICAL SERVICES
Client Request

[ ] Regional Transmittal [ ] Telephone Request

A. EPA Region/Client: V / WESTON

B. RSCC Representative: Dennis Wesoloski

C. Telephone Number: (312) 886-1971

D. Date of Request:

E. Site Name: Skinner Landfill

Please provide below a description of your request for Special Analytical Services under the Contract Laboratory Program. In order to most efficiently obtain laboratory capability f your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

1. General description of analytical service requested: Analysis of groundwater samples for seven organochloride hydrocarbons, 3 of which are currently HSL compounds and 4 which are not. To be analyzed using GC/EC and GC/MS.

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

(23) groundwater samples, low concentration.
(2) of which are duplicates and (2) are blanks

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

Superfund RI/FS

4. **Estimated date(s) of collection:** Weeks of August 1 and August 8, 1986

5. **Estimated date(s) and method of shipment:** Weeks of August 1 and August 8, 1986

6. **Number of days analysis and data required after laboratory receipt of samples:**

30 days

7. **Analytical protocol required (attach copy if other than a protocol currently used in this program):**

Pesticide Protocol (GC/EC) as per CLP SOW-WA85-J836/J839 and Base/Neutral/Acid extractable protocol (GC/MS) as per CLP SOW-WA-J836/J839. Analyse for the compounds in Table I initially using GC/EC according to SOW for pesticides. For any samples where compounds are found in quantities greater than the requested detection limit for GC/MS (TableI) these samples must be run using GC/MS according to SOW for A/B/N Fraction.

8. **Special technical instruction (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** The following compounds should be added to the IFB required calibration standards and metrix spike compounds for each method:

Hexachloronorboradiene

Octachlorocyclopentene

Heptachloronorborene

Chlordene

9. **Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to program discretion.**

As per SOW WA-85-J838/J839

10. **Other (use additional sheets or attach supplementary information, as needed):**

11. **Name of sampling/shipping contact:** Wendy Dewar

Phone: (312) 786-0253

I. DATA REQUIREMENTS

Parameter:	Detection Limit	Precision Desired (±% or Conc.)
See Table I		±20 for both methods

II. QC REQUIREMENTS

Audits Required	Frequency of Audits	Limits* (% or Conc.)
Matrix Spike/Matrix Spike	One per 10 samples or	35%-135%
Duplicate	less	
Laboratory Blank	One per 10 samples	As per IFB
	or less	
Surrogates	As per IFB	
Summarized on Table II		

III. ACTION REQUIRED IF LIMITS ARE EXCEEDED:

Contact Dennis Wesoloski - Region V EPA (312) 886-1971

Please return this request to the Sample Management Office as soon as possible to expedite processing of your request for special analytical services. Should you have any questions or need any assistance, please call the Sample Management Office.

U.S. Environmental Protection Agency
CLP Sample Management Office
P. O. Box 818, Alexandria, Virginia 22313
PHONE: (703)/557-2490 or FTS/557-2490

SAS Number

SPECIAL ANALYTICAL SERVICES
Client Request

☐ Regional Transmittal ☐ Telephone Request

A. EPA Region/Client: V / WESTON

B. RSCC Representative: Dennis Wesoloski

C. Telephone Number: (312) 886-1971

D. Date of Request: August 10, 1986

E. Site Name: Skinner Landfill

Please provide below a description of your request for Special Analytical Services under the Contract Laboratory Program. In order to most efficiently obtain laboratory capability f your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

1. General description of analytical service requested: Analysis of groundwater samples for seven organochloride hydrocarbons, 3 of which are currently HSL compounds and 4 which are not. To be analyzed using GC/EC and GC/MS.

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

(9) groundwater samples, low concentration.

(2) of which are duplicates and (2) are blanks

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

Superfund RI/FS

4. **Estimated date(s) of collection:** Weeks of August 18 and August 25, 1986

5. **Estimated date(s) and method of shipment:** Weeks of August 18 and August 25, 1986

6. **Number of days analysis and data required after laboratory receipt of samples:**

30 days

7. **Analytical protocol required (attach copy if other than a protocol currently used in this program):**

Analyze for the compounds in Table I using GC/EC. Extraction of pesticide (GC/EC) analysis performed according to IFB WA J838/839. For analysis, lab should use various temperature programs and combinations of dissimilar capillary columns to achieve resolution of all seven compounds to a level of less than a 25% valley. Lab must use a second dissimlar column for confirmation. For any samples where compounds are found in quantities greater than requested detection limit for GC/MS (Table I) these samples must be run using GC/MC according to IFB WA J 838/839 for Acid/Base/Neutral fraction. Quantitation should be on the ~~largest ion with no interference~~

8. **Special technical instruction (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.):** For GC/EC analysis the following compounds should be chromatographed separately on both columns and then mixed and run as a standard mix to show the resolution of the chromatography.

A three point calibration must be run as per IFB:

Hexachloronorboradiene
Octachlorocyclopentene
Heptachloronorborene
Chlordene

For samples of sufficient concentration to be analyzed by GC/MS, a three point calibration must be done using the mix of compounds. For both methods, internal standards(see attac

9. **Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to program discretion.**

~~Lab must submit all spectra, calibration forms etc. as per IFB WA 85 J838/839 successful~~ combinations of temperature programs and columns should be identified and accompanied by all IFB required data

10. **Other (use additional sheets or attach supplementary information, as needed):**

11. **Name of sampling/shipping contact:** Wendy Dewar

Phone: 312 786 1313

8. Continued

must be used as per IFB ~~[illegible]~~. The above compounds ~~added to the~~ should be used in the matrix spike at 5X the detection limit

TABLE 1

RESIDENTIAL WELLS TO BE SAMPLED
IN THE VICINITY OF THE SKINNER LANDFILL

- Binder (2 locations)
- Brotherton
- Cozzort
- Hancock
- Hoff
- McDaniel
- Meade
- Poff
- Widmeyer

TABLE 2

ANALYTICAL PARAMETERS FOR GROUNDWATER
SAMPLES COLLECTED FROM RESIDENTIAL WELLS
IN THE VICINITY OF THE SKINNER LANDFILL

Laboratory Parameters	Investigative Samples	Duplicate Samples	Blank Samples	Total
HSL Acid extractables and base/neutral extractables	10	1	1	12
HSL Pesticides and PCBs	10	1	1	12
Additional pesticides*	10	1	1	12
HSL Volatile Organics	10	1	1	12
HSL Metals and Major Cations	10	1	1	12
Cyanide (unfiltered samples)	10	1	1	12
Minerals (alkalinity, chloride, sulfate)	10	1	1	12
Nutrients (ammonia, nitrate-nitrite)	10	1	1	12

* Four non-HSL pesticide compounds: hexachloronorboradiene, octachlorocyclopentene, heptachloronorborene, chlordene.

TABLE 3

ANALYTICAL PARAMETERS FOR GROUNDWATER
SAMPLES COLLECTED FROM
MONITORING WELLS AT THE SKINNER LANDFILL

Laboratory Parameters	Investigative Samples	Duplicate Samples	Blank Samples	Total
RAS Organics package including 30 tentatively identified parameters	18	2	2	22
RAS Inorganics/metals package from CLP (filtered samples)	18	2	2	22
RAS Cyanide (filtered samples)	18	2	2	22
SAS Additional pesticides*	18	2	2	22
SAS Minerals (alkalinity, chloride, sulfate)	18	2	2	22
SAS Nutrients (ammonia, nitrate-nitrite	18	2	2	22

* Four non-HSL pesticide compounds: hexachloronorboradiene, octachlorocylcopentene, heptachloronorborene, chlordane.

APPENDIX 2

SAS REQUEST FORMS

METHOD DETECTION LIMITS FOR ORGANICS FROM CRL (Continued)

BASE/NEUTRAL AND ACID EXTRACTABLE COMPOUNDS

PARAMETER	CAS #	METHOD* DETECTION LIMIT (ug/l)
ANILINE	62-53-3	1.5
BIS (2-CHLOROETHYL) ETHER	111-44-4	1.5
PHENOL	108-95-2	2.0
2-CHLOROPHENOL	95-57-8	2.0
1,3-DICHLOROBENZENE	541-73-1	2.0
1,4-DICHLOROBENZENE	106-46-7	2.0
1,2-DICHLOROBENZENE	95-50-1	2.5
BENZYL ALCOHOL	100-51-6	2.0
BIS (2-CHLOROLSOPROPYL) ETHER	118-60-1	2.5
2-METHYLPHENOL	95-48-7	1.0
HEXACHLOROETHANE	67-72-1	2.0
N-NITROSODIPROPYLAMINE	621-64-1	1.5
NITROBENZENE	98-85-3	2.5
4-METHYLPHENOL	108-39-4	1.0
ISOPHORONE	78-59-1	2.5
2-NITROPHENOL	88-75-5	2.0
2,4-DIMETHYLPHENOL	105-67-9	2.0
BIS (2-CHLOROETHOXY) METHANE	111-91-1	2.5
2,4-DICHLOROPHENOL	120-83-2	2.0
1,2,4-TRICHLOROBENZENE	120-82-1	2.0
NAPHTHALENE	91-20-3	2.0
4-CHLOROANILINE	106-47-8	2.0
HEXACHLOROBUTADIENE	87-68-3	2.5
BENZOIC ACID	65-85-0	(30)
2-METHYLNAPHTHALENE	91-57-6	2.0
4-CHLORO-3-METHYLPHENOL	59-50-7	1.5
HEXACHLOROCYCLOPENTADIENE	77-47-4	2.0
2,4,5-TRICHLOROPHENOL	95-95-4	1.5
2,4,6-TRICHLOROPHENOL	88-06-2	1.5
2-CHLORONAPHTHALENE	91-58-7	1.5
ACENAPHTHYLENE	208-96-8	1.5
DIMETHYL PHTHALATE	131-111-3	1.5
2,6-DINITROTOLUENE	606-20-2	1.0
ACENAPHTHENE	83-32-9	1.5
3-NITROANILINE	99-09-2	2.5

* In Reagent Water

NOTE: Method Blank Limit in Reagent Water is 2x Detection Limit
Values in Parenthesis are estimated.

METHOD DETECTION LIMITS FOR INORGANICS FROM CRL

Parameter	Method Detection Limit* (ug/l)	Upper Limit of Working Range Without Dilution*
Aluminum	80	1×10^6
Chromium	8	2×10^4
Barium	5	2×10^4
Beryllium	1	2×10^4
Cobalt	6	2×10^4
Copper	6	2×10^4
Iron	80	1×10^6
Lithium	10	2×10^4
Nickel	15	2×10^4
Manganese	5	2×10^4
Molybdenum	10	2×10^4
Zinc	40	1×10^6
Boron	80	2×10^4
Vanadium	5	2×10^4
Silver	3	1×10^4
Arsenic	2	30
Antimony	2	30
Selenium	2	30
Thallium	2	30
Mercury	.1	2.0
Tin	40	2×10^4
Strontium	10	2×10^4
Titanium	25	2×10^4
Vanadium	5	2×10^4
Yttrium	5	2×10^4
Calcium	500	1×10^6
Potassium	2000	1×10^6
Magnesium	100	2×10^5
Sodium	1000	1×10^6
Cadmium	2	2×10^4
Lead	2	30 (AA), 2×10^4 (ICP)
Cyanide	5	200
Alkalinity ($CaCO_3$)	5000	3×10^5
Chloride	3000	2×10^5
Fluoride	100	4×10^3
Sulfate	4000	3×10^5
Ammonia Nitrogen	.1	10^5
TKN	100	1×10^5
Nitrate and Nitrite	.1	10^5
TOC	3000	1×10^5
Total Phosphorous	50	4×10^3
Chemical Oxygen Demand	3000	4×10^5
TDS	2×10^4	N/A
TSS	5000	N/A

* In Reagent Water

METHOD DETECTION LIMITS FOR ORGANICS FROM CRL (Continued)

BASE/NEUTRAL AND ACID EXTRACTABLE COMPOUNDS (Continued)

PARAMETER	CAS #	METHOD* DETECTION LIMIT (ug/l)
DIBENZOFURAN	132-64-9	1.0
2,4-DINITROPHENOL	51-28-5	(15)
2,4-DINITROTOLUENE	121-14-2	1.0
FLUORENE	86-73-7	1.0
4-NITROPHENOL	100-02-7	1.5
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	1.0
DIETHYL PHTHALATE	84-66-2	1.0
4,6-DINITRO-2-METHYLPHENOL	534-52-1	(15)
1,2-DIPHENYLHYDRAZINE (AZOBENZENE)	122-66-7	1.0
N-NITROSODIPHENYLAMINE AND DIPHENYLAMINE	100-01-6	3.0
4-NITROANILINE	100-01-6	3.0
4-BROMOPHENYL PHENYL ETHER	101-55-3	1.5
HEXACHLOROBENZENE	118-74-1	1.5
PENTACHLOROPHENOL	87-86-5	2.0
PHENANTHRENE	85-01-8	1.0
ANTHRACENE	120-12-7	2.5
DI-n-BUTYL PHTHALATE	84-74-2	2.0
FLUORANTHENE	206-44-0	1.5
PYRENE	129-00-0	1.5
BUTYL BENZYL PHTHALATE	85-68-7	3.5
CHRYSENE**	218-01-9	
BENZO (a) ANTHRACENE**	56-55-3	1.5
BIS (2-ETHYLHEXYL) PHTHALATE	117-81-7	1.0
DI-n-OCTYL PHTHALATE	117-84-0	1.5
BENZO (b) FLUORANTHENE***	205-99-2	
BENZO (k) FLUORANTHENE***	207-08-9	1.5
BENZO (a) PYRENE	193-39-5	2.0
INDENO (1,2,3-cd) PYRENE	193-39-5	3.5
DIBENZO (a,h) ANTHRACENE	53-70-3	2.5
BENZO (ghi) PERYLENE	191-24-2	4.0
2-NITROANILINE	88-74-4	1.0

* In Reagent Water
** These two parameters reported as a total
*** These two parameters reported as a total

Note: Values in parameters are estimated

Detection Limits for RAS
Inorganics from CLP

Element	Contract Required Detection Level[1,2] (ug/L)
Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Calcium	5000
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	5
Magnesium	5000
Manganese	15
Mercury	0.2
Nickel	40
Potassium	5000
Selenium	5
Silver	10
Sodium	5000
Thallium	10
Vanadium	50
Zinc	20
Cyanide	10

1: Any analytical method specified in SOW Exhibit D may be utilized as long as the documented instrument or method detection limits meet the Contract Required Detection Level (CRDL) requirements. Higher detection levels may only be used in the following circumstance:

If the sample concentration exceeds two times the detection limit of the instrument or method in use, the value may be reported even though the instrument or method detection limit may not equal the contract required detection level. This is illustrated in the example below:

- For lead:
  Method in use = ICP
  Instrument Detection Limit (IDL) = 40
  Sample concentration = 85
  Contract Required Detection Level (CRDL) = 5

The value of 85 may be reported even though instrument detection limit is greater than required detection level. The instrument or method detection limit must be documented as described in Exhibit E.

2: These CRDL are the instrument detection limits obtained in pure water that must be met using the procedure in Exhibit E. The detection limits for samples may be considerably higher depending on the sample matrix.

METHOD DETECTION LIMITS FOR ORGANICS FROM CRL (Continued)

PESTICIDES AND PCBS

PARAMETER	CAS #	METHOD* DETECTION LIMIT ug/l
ALDRIN	309-00-2	0.005
alpha BHC	319-84-6	(0.010)
beta BHC	319-85-7	(0.005)
delta BHC	319-86-8	(0.005)
gama BHC (LINDANE)	58-89-9	0.005
CHLORADANE	57-74-9	(0.020)
4,4'-DDD	72-54-8	(0.020)
4,4'DDE	72-55-9	(0.005)
4,4'-DDT	50-29-3	0.020
DIELDRIN	60-57-1	0.010
ENDOSULFAN I	959-98-8	0.010
ENDOSULFAN II	33213-65-9	0.010
ENDOSULFAN SULFATE	1031-07-8	(0.10)
ENDRIN	72-20-8	0.010
ENDRIN ALDEHYDE	7421-93-4	(0.030)
ENDRIN KETONE	53494-70-5	(0.030)
HEPTACHLOR	76-44-8	0.030
HEPTACHLOR EPOXIDE	1024-57-3	0.005
4,4'-METHOXYCHLOR	72-43-5	0.020
TOXAPHENE	8001-35-2	(0.25)
PCB-1242	53469-21-9	(0.10)
PCB-1248	12672-29-6	(0.10)
PCB-1254	11097-69-1	(0.10)
PCB-1260	11096-82-5	(0.10)

* In Reagent Water

Note: Values in parentheses are estimated.

I Data Requirements

Parameter:	Detection Limit	Precision Desired (±% or Conc.)
Chloride in water	3 - 5 mg/l	Duplicates are within ± 10% for concentrations exceeding 20 mg/l at 95% confidence level or duplicates difference are ≤ 2 mg/l at concentration ≤ 20 mg/l. Results reported to the nearest mg/l or 2 significa figures for concentrations exceeding 100 mg/l.

Sample spike concentrations will be greater than 30% of sample concentration, but spiked samples shall not exceed working concentration range of standard curve.

II. QC Requirements

Audits Required	Frequency of Audits	Limits* (% or Conc.)
1. Sample Spike	One for every 10 samples	85-115% Recovery of spike added.
2. Lab Control Standard 1 set of 2 EPA QC Minera reference standards.	Lab control standards are to be tested at beginning and end of run AND EVERY 10 SAMPLES TESTED	85-115% Recovery
3. Lab Duplicates	One for every 10 samples	±10% or less than 2 mg/l
4. Lab Blanks	One for every 10 samples	3 mg/l

II. *Action Required if Limits are Exceeded:

Notify: Dennis Wesolowski wshi - U.S. EPA (312) 886-1971

...Sample Management Office
P.O. Box 818, Alexandria, Virginia 22313
PHONE: (703) 557-2490 or FTS-557-2490

SPECIAL ANALYTICAL SERVICES
Regional Request

SULFATE ANALYSIS IN WATER

[X] Regional Transmittal [ ] Telephone Request

A. EPA Region and Site Name: Skinner Landfill, Region V

B. Regional Representative: Dennis Wesolowski

C. Telephone Number: (312) 886-1971

D. Date of Request:

Please provide below a description of your request for Special Analytical Services under the Uncontrolled Hazardous Waste Dumpsite Program. In order to most efficiently obtain laboratory capability for your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

E. General description of analytical service requested:

1. Analysis for sulfate

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

22 groundwater samples, low concentrations, 2 of which are duplicates and 2 are blanks

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

Superfund RI/FS activity at fund - lead site

4. Estimated date(s) of collection: Weeks of August 1 and August 8, 1986

5. Estimated date(s) and method of shipment: Weeks of August 1 and Air Express August 8, 1986

6. Approximate number of days results required after lab receipt of samples: 30 days

Analytical protocol required (attach copy if other than a protocol currently used in this program):

(1) EPA Method 375.2 (Automated Methyl Thymol Blue) or (2) EPA Method 375.4 (Turbidimetric

Use 375.4 for sample that contain < 500 mg/l silica and sulfate not exceeding 40 mg/l.

8. Special technical instructions (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.):

Sample aliquots will be refrigerated until analysis and validation of results. (2) Turbidity blank correction will be done for each sample aliquot if Method 375.4 is used. (3) No sulfate concentration exceeding 40 mg/l will be measured if Method 375.4 is used. If sulfate exceeds 40 mg/l, sample aliquot will be diluted to between 20 and 40 mg/L Analysis must be completed within 28 days of the sampling date

9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to program discretion.

Test procedure used will be clearly identified. Bench records tabulating order of calibration standards, lab blanks, samples, lab control standards, etc., will be provided along with copies of worksheets used to calculate sulfate results. All records of analysis and calculations must be legible.

10. Other (use additional sheets or attach supplementary information, as needed):

11. Name of sampling/shipping contact: Wendy Dewar, COM

Phone: (312) 786-0253

Please return this request to the Sample Management Office as soon as possible to expedite

I. Data Requirements

Parameter:	Detection Limit	Precision Desired (±% or Conc.)
Sulfate	3 - 5 mg/l	Duplicates are within ±10% for concentrations exceeding 20 mg/l (at 95% confidence level) or duplicates differences are < 2 mg/l. Results are reported to nearest mg/l or 2 significant figures for concentrations exceeding 100 mg/l.

II. QC Requirements

Audits Required	Frequency of Audits	Limits* (% or Conc.)
(_) Sample Spike-concentrations will be greater than 30% of sample concentration but spiked samples shall not exceed working concentration range of standard curve	1 per 10 samples or less	85-115% Recovery of spike added
(2) Lab Control Standard 1 set of EPA QC Mineral Reference Samples	Lab control standards are to be tested at beginning and end of run AND EVERY 10 SAMPLES TESTED	%R 85-115%
(3) Lab Duplicates	One for every 10 samples	R%D < 10% or < 2 mg/l, which is ever less
(4) Lab Blanks	One for every 10 samples	< 3 mg/l

III. *Action Required if Limits are Exceeded:

Notify: Dennis Wesolowski - U.S. EPA (312) 886-1971

...Environmental Protection Agency)
WI Sample Management Office
O. Box 818, Alexandria, Virginia 22313
PHONE: (703) 557-2490 or FTS-557-2490

SAS Number

SAS/11

SPECIAL ANALYTICAL SERVICES
Regional Request

AMMONIA ANALYSIS IN WATER

☑ Regional Transmittal ☐ Telephone Request

1. EPA Region and Site Name: Skinner Landfill. Region V
2. Regional Representative: Dennis Wesoloski
3. Telephone Number: (312) 886-1971
4. Date of Request:

Please provide below a description of your request for Special Analytical Services under the Uncontrolled Hazardous Waste Dumpsite Program. In order to most efficiently obtain laboratory capability for your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

1. General description of analytical service requested:

   1. Analysis for Ammonia

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

   22 groundwater samples, low concentration, 2 of which are duplicates and 2 are blanks

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

   Superfund RI/FS activity at fund - lead site

4. Estimated date(s) of collection: Weeks of August 1 and August 8,1986

5. Estimated date(s) and method of shipment: Weeks of August 1 and August 8, 1986 Air Express

6. Approximate number of days results required after lab receipt of samples: 30 days

7. Analytical protocol required (attach copy if other than a protocol currently used in this program):

1. EPA Method 350.1 (Automated Phenate), or

2. EPA Method 350.3 (Potentiometric, Ion Selective Electrode)

Samples Aliquots will be preserved with 1 ml/l H_2SO_4.

Ammonia will be reported as mg/l N.

8. Special technical instructions (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.): Sample aliquots will be refrigerated until analysis and validation of results. Sample holding time of 28 days after collection.

9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to program discretion.

Test Procedure used will be clearly identified. Bench records tabulating order of calibrat standards, lab blanks, samples, lab control standards, etc., with resulting absorbance, millivolts, or concentration read-outs, will be provided along with copies of worksheets us to calculate ammonia results. All records of analysis and calculation must be legible.

10. Other (use additional sheets or attach supplementary information, as needed):

11. Name of sampling/shipping contact: Wendy Dewar, CDM

Phone: (312) 786-0253

Please return this request to the Sample Management Office as soon as possible to expedite

I. **Data Requirements**

Parameter:	Detection Limit	Precision Desired (±% or Conc.)
Ammonia	0.10 mg/l N	Duplicates are within ±10% (or less than 0.1 mg/l N at concentration less than 1 mg/l N) at 95% confidence level. Results will be reported to nearest 0.05 mg for concentrations less than 1 mg/l N and to 2 significant figures for concentrations exceeding 1 mg/l N.

I **QC Requirements**

Audits Required	Frequency of Audits	Limits* (% or Conc.)
1. Sample Spike	One for every 10 samples	85-115% Recovery of spike added.
2. Lab Control Standard - 1 Set of 2 EPA QC Nutrient Reference samples (conc. #1 and #2)	Samples tested at beginning and EVERY 10 SAMPLES	85-115% Recovery or 0.10 mg/l N error
3. Lab Duplicates	One for every 10 samples Evenly distributed throughout analysis	±10% or ≤ 0.10 mg/l N
4. Lab Blank	One for every 10 samples	0.10 mg/l N

I.. *Action Required if Limits are Exceeded:

Notify: Dennis Wesolowski - U.S. EPA (312) 886-1971

U.S. Environmental Protection Agency
CLP Sample Management Office
P.O. Box 818, Alexandria, Virginia 22313
PHONE: (703) 557-2490 or FTS-557-2490

SAS Number

SAS/12

SPECIAL ANALYTICAL SERVICES
Regional Request

NITRATE + NITRITE ANALYSI IN WATER

[X] Regional Transmittal [ ] Telephone Request

a. EPA Region and Site Name: Skinner Landfill, Region V
b. Regional Representative: Dennis Wesolowski
c. Telephone Number: (312) 886-1971
d. Date of Request:

Please provide below a description of your request for Special Analytical Services under the Uncontrolled Hazardous Waste Dumpsite Program. In order to most efficiently obtain laboratory capability for your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

1. General description of analytical service requested:

1. Analysis for Nitrate + Nitrite

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium, or high concentration):

22 groundwater samples, low concentration, 2 of which are duplicates and 2 are blank

3. Purpose of analysis (specify whether Superfund (Remedial or Enforcement), RCRA, NPDES, etc.):

Superfund RI/FS activity at fund - lead site

4. Estimated date(s) of collection: Weeks of August 1 and August 8, 1986

5. Estimated date(s) and method of shipment: Weeks of August 1-and August 8, 1986 Air Express

6. **Approximate number of days results required after lab receipt of samples:** 30 days

7 **Analytical protocol required (attach copy if other than a protocol currently used in this program):**

1. EPA Method 353.1 (Colorimetric, Automated Hydrazine Reduction), or
2. EPA Method 353.2 (Colorimetric, Automated Cadmium Reduction), or
3. EPA Method 353.3 (Colorimetric, Manual Cadmium Reduction)

Sample Aliquots will be preserved with 1 ml/l H_2SO_4.

Nitrate + Nitrite will be reported as mg/l N.

8. **Special technical instructions (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.):**

Sample aliquots will be refrigerated until analysis and validation of results.

Sample holding time of 30 days after collection.

9. **Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.). If not completed, format of results will be left to program discretion.**

Test Procedures used will be clearly identified. Bench records tabulating order of calibration standards, lab control standards, lab blanks, samples, etc., with resulting absorbance or concentration read-outs, will be provided along with copies of worksheets used to calculate nitrate + nitrite results. All records of analysis and calculation must be legible.

10. **Other (use additional sheets or attach supplementary information, as needed):**

11. **Name of sampling/shipping contact:** Wendy Dewar, CDM

Phone: (312) 786-0253

Please return this request to the Sample Management Office as soon as possible to expedite processing of your request for special analytical services. Should you have any questions

- **Data Requirements**

Parameter:	Detection Limit	Precision Desired (± % or Conc.)
Nitrate + Nitrite	0.10 mg/l N	Duplicates are within ± 10% (or within ± 0.10 mg/l at concentrations less than 1.0 mg/l N) at 95% confidence level. Results will be reported to the nearest 0.05 mg/l N for concentration less than 1.0 mg/l N and to 2 significant figures for concentrations exceeding 1 mg/l N.

Sample spike concentration will be greater than 30% of sample concentration but spiked sample shall not working concentration of standard curve.

I. QC Requirements

Audits Required	Frequency of Audits	Limits* (% or Conc.)
1. Sample Spike	One for every 10 samples	85-115% of Recovery of Spike added. Average recovery 90-110
2. 1 set of 2 EPA QC Nutrient Reference samples (conc. #1 and #2) or 1 set of 2 EPA QC water supply Nitrate/ Fluoride reference samples.	Lab control samples are to be tested at beginning and every 10 samples tested	85-115% Recovery or 0.10 mg/l N
3. Lab Duplicates	One for every 10 samples Evenly spaced throughout analysis.	±10% or ≤ 0.1 mg/l N
4. Lab Blanks	One for every 10 samples	0.10 mg/l N

I. *Action Required if Limits are Exceeded:

Notify: Dennis Wesolowski - U.S. EPA (312) 886-1971

The environmental monitoring and measurement efforts covered by this QAPP are contained in the Study Area Survey, Source Characterization and Site Characterization elements.

2.3 SCHEDULE

The Skinner Landfill RI/FS was authorized September 26, 1984. The Draft Work Plan will be submitted to the U.S. EPA in July 1985. The anticipated date for submission of the Final Work Plan and related project plans to the U.S. EPA is mid-August.

Assuming 120 days for agency approval and PRP review of the work plan, the RI could begin in December with field work beginning soon thereafter. The initial field investigations are anticipated to require about 8 weeks to complete, and a second round of water sampling (groundwater and private water wells) will occur at least one month later, about early April 1986. Depending on the turnaround for analytical data from the CLP, the RI should be finished 4 to 5 months after the second round of sampling.

The FS will require approximately 5 months to complete. Following a three-week public comment period and agency review of the Draft Feasibility Study Report, approximately two months will be needed to prepare the conceptual design of the selected remedial action(s).

The total elapsed time from U.S. EPA approval of the work plan to submission of the final deliverables is estimated to be 17 months. A preliminary project schedule is shown in Figure 2-4. This schedule will be updated, as appropriate, throughout the RI/FS project.

2.4 DATA USAGE

The data obtained during this RI will be used to achieve the objectives outlined above (Subsection 2.2) within the scope and authority of CERCLA. Samples collected at the site will be analyzed for all parameters on the Hazardous Substances List (HSL) and for additional pesticides identified during previous sampling events to determine whether these materials are present. Lists of specific parameters are included in Subsection 2.6. The data obtained from sampling and analysis of private water wells will also be evaluated with respect to the National Interim Primary Drinking Water Standards, 40 CFR Part 141 Subpart B for information purposes only. RCRA characterication of wastes is not an objective of the current field investigation. An evaluation of the adequacy of the data for the uses described above will be performed as part of the RI Report.